IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: Group Art Unit:

Inventors: Prosser et al. Filed: Concurrently

Title: Cryogenic Air Separation System For Producing Elevated Pressure Nitrogen

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

In accordance with 37 CFR 1.51, 1.56 and 1.97 to 1.99, the following is a relevance statement on each citation listed on attached form PTO-1449, and is made of record to assist the Patent & Trademark Office in its examination of this application:

U.S. 4,453,957 – Pahade et al. discloses a cryogenic process to efficiently produce large quantities of nitrogen gas at elevated pressure by use of a double column and multiple condenser reboilers. There is no disclosure of a cryogenic air separation system for producing elevated pressure nitrogen wherein a portion of the nitrogen product fed to the product compressor downstream of the primary heat exchanger is withdrawn as refrigerant nitrogen from the product compressor and turboexpanded to generate refrigeration for the system, and thus this patent neither discloses nor suggests applicants' claimed invention.

U.S. 4,783,209 – Erickson discloses a system for obtaining more refrigeration from a cold pressurized stream of nitrogen being expanded to discharge pressure wherein cold expansion is followed or preceded by warm compression of at least part of the same stream being expanded. There is no disclosure of a cryogenic air separation system for producing elevated pressure nitrogen wherein a portion of the nitrogen product fed to the product compressor downstream of the primary heat exchanger is withdrawn as refrigerant nitrogen from the product compressor and turboexpanded to generate

refrigeration for the system, and thus this patent neither discloses nor suggests applicants' claimed invention.

U.S. 5,197,296 – Prosser et al. discloses a cryogenic rectification system for producing elevated pressure product wherein the lower pressure column of a two column system is operated at elevated pressure and nitrogen-containing fluid taken from the upper portion of the lower pressure column is used to generate plant refrigeration. There is no disclosure of a cryogenic air separation system for producing elevated pressure nitrogen wherein a portion of the nitrogen product fed to the product compressor downstream of the primary heat exchanger is withdrawn as refrigerant nitrogen from the product compressor and turboexpanded to generate refrigeration for the system, and thus this patent neither discloses nor suggests applicants' claimed invention.

U.S. 5,412,953 – Darredeau et al. discloses a system for the production of gaseous oxygen and/or gaseous nitrogen under pressure wherein an additional cycle fluid withdrawn from the double column is reheated, compressed to a high cycle pressure, cooled, a fraction thereof expanded with the production of external work, and the rest of the compressed additional cycle fluid is liquefied. There is no disclosure of a cryogenic air separation system for producing elevated pressure nitrogen wherein a portion of the nitrogen product fed to the product compressor downstream of the primary heat exchanger is withdrawn as refrigerant nitrogen from the product compressor and turboexpanded to generate refrigeration for the system, and thus this patent neither discloses nor suggests applicants' claimed invention.

U.S. 5,675,977 – Prosser – discloses a cryogenic rectification system for producing oxygen and nitrogen employing a kettle liquid column which processes oxygen-enriched kettle liquid from a higher pressure column and which is reboiled by a fluid taken from below the top of the higher pressure column. There is no disclosure of a cryogenic air separation system for producing elevated pressure nitrogen wherein a portion of the nitrogen product fed to the product compressor downstream of the primary heat exchanger is withdrawn as refrigerant nitrogen from the product compressor and turboexpanded to generate refrigeration for the system, and thus this patent neither discloses nor suggests applicants' claimed invention.

U.S. 6,286,336 – Prosser discloses a cryogenic air separation system particularly useful for producing elevated pressure product wherein additional reflux is generated by a heat pump circuit operating between the upper portion and an intermediate location of the lower pressure column of a double column. There is no disclosure of a cryogenic air separation system for producing elevated pressure nitrogen wherein a portion of the nitrogen product fed to the product compressor downstream of the primary heat exchanger is withdrawn as refrigerant nitrogen from the product compressor and turboexpanded to generate refrigeration for the system, and thus this patent neither discloses nor suggests applicants' claimed invention.

U.S. 6,543,253 – Schaub et al. discloses a method for providing refrigeration to a cryogenic rectification plaint which enables the facile provision of varying amounts of refrigeration to the plant wherein a working fluid is pressurized in a recycle compressor, a first portion is at least partially condensed in a heat exchanger and passed into the plant, a second portion is cooled and then turboexpanded to generate refrigeration which is used to condense the first portion, with the resulting second portion returned to the recycle compressor. There is no disclosure of a cryogenic air separation system for producing elevated pressure nitrogen wherein a portion of the nitrogen product fed to the product compressor downstream of the primary heat exchanger is withdrawn as refrigerant nitrogen from the product compressor and turboexpanded to generate refrigeration for the system, and thus this patent neither discloses nor suggests applicants' claimed invention.

Respectfully submitted,

Stanley Ktorides

Stanley Ktorides
Attorney for Applicants
Reg. No. 29,399

Praxair, Inc.
39 Old Ridgebury Road
Danbury, CT 06810-5113
Phone: (203) 837-2178

Attorney Ref.: D-21388

Date: DECEMBER 22, 2003

Form PTO-1449 (Rev. 8-83) U.S. Department of Commerce	Atty. Docket No. D-21388	Serial No.
Information Disclosure Citation (Use several sheets if necessary)	Applicants Prosser et al.	
	Filing Date	Group

U.S. PATENT DOCUMENTS

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
		4 4 5 3 9 5 7	6/1984	Pahade et al.	62	25	
		4 7 8 3 2 0 9	11/1988	Erickson	62	22	
		5 1 9 7 2 9 6	3/1993	Prosser et al.	62	39	
		5 4 1 2 9 5 3	5/1995	Darredeau et al.	62	25	
		5 6 7 5 9 7 7	10/1997	Prosser	62	646	
		6 2 8 6 3 3 6	9/2001	Prosser	62	648	
		6 5 4 3 2 5 3	4/2003	Schaub et al.	62	643	5-24-02

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes	Translation No

Other Documents (including Author, Title, Date, Pertinent Pages, Etc.)

Examiner	Date Considered

* EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.